```
=> d his

     (FILE 'HOME' ENTERED AT 09:36:07 ON 20 OCT 2002)

     INDEX 'ADISALERTS, ADISINSIGHT, ADISNEWS, AGRICOLA, ANABSTR, AQUASCI,
     BIOBUSINESS, BIOCOMMERCE, BIOSIS, BIOTECHABS, BIOTECHDS, BIOTECHNO,
CABA,
     CANCERLIT, CAPLUS, CEABA-VTB, CEN, CIN, CONFSCI, CROPB, CROPU, DDFB,
     DDFU, DGENE, DRUGB, DRUGLAUNCH, DRUGMONOG2, ...' ENTERED AT 09:36:14 ON
     20 OCT 2002
               SEA (THERMOSTABLE CELLULASE)
               ---------
                5   FILE AGRICOLA
                4   FILE AQUASCI
                7   FILE BIOBUSINESS
                2   FILE BIOCOMMERCE
               29   FILE BIOSIS
              186   FILE BIOTECHABS
              186   FILE BIOTECHDS
               16   FILE BIOTECHNO
               10   FILE CABA
               62   FILE CAPLUS
               22   FILE CEABA-VTB
                1   FILE CIN
                1   FILE CONFSCI
               61   FILE DGENE
               14   FILE EMBASE
               11   FILE ESBIOBASE
                6   FILE FEDRIP
                2   FILE FROSTI
               16   FILE FSTA
               13   FILE GENBANK
                5   FILE IFIPAT
                9   FILE JICST-EPLUS
               20   FILE LIFESCI
                9   FILE MEDLINE
                2   FILE NTIS
                1   FILE OCEAN
               16   FILE PASCAL
                2   FILE PROMT
               34   FILE SCISEARCH
                8   FILE TOXCENTER
               24   FILE USPATFULL
                3   FILE WPIDS
                3   FILE WPINDEX
L1              QUE (THERMOSTABLE CELLULASE)
                ---------

     FILE 'BIOTECHDS, CAPLUS, SCISEARCH, BIOSIS' ENTERED AT 09:39:10 ON 20
OCT
     2002

     FILE 'SCISEARCH, MEDLINE, EMBASE' ENTERED AT 09:39:51 ON 20 OCT 2002
L2            7 S L1 AND (FAMILY 12)
L3            3 DUP REM L2 (4 DUPLICATES REMOVED)
```

=> d l3 ibib ab 1-3

L3 ANSWER 1 OF 3 SCISEARCH COPYRIGHT 2002 ISI (R)
ACCESSION NUMBER: 2002:672352 SCISEARCH
THE GENUINE ARTICLE: 581DU
TITLE: The structure of Rhodothermus marinus Cel12A, a highly thermostable **family 12** endoglucanase, at 1.8 angstrom resolution
AUTHOR: Crennell S J (Reprint); Hreggvidsson G O; Karlsson E N
CORPORATE SOURCE: Univ Bath, Dept Biol & Biochem, Bath BA2 7AY, Avon, England (Reprint); Prokaria, Gylfaflot, Reykjavik, Iceland
COUNTRY OF AUTHOR: England; Iceland
SOURCE: JOURNAL OF MOLECULAR BIOLOGY, (19 JUL 2002) Vol. 320, No. 4, pp. 883-897.
Publisher: ACADEMIC PRESS LTD ELSEVIER SCIENCE LTD, 24-28 OVAL RD, LONDON NW1 7DX, ENGLAND.
ISSN: 0022-2836.
DOCUMENT TYPE: Article; Journal
LANGUAGE: English
REFERENCE COUNT: 56

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Cellulose is one of the most abundant polysaccharides in nature and microorganisms have developed a comprehensive system for enzymatic breakdown of this ubiquitous carbon source, a subject of much interest in the biotechnology industry. Rhodothermus marinus produces a hyper-**thermostable cellulase**, with a temperature optimum of more than 90degreesC, 2 the structure of which is presented here to 1.8 Angstrom resolution. The enzyme has been classified into glycoside hydrolase **family 12**; this is the first structure of a thermophilic member of this family to have been solved. The P-jelly roll fold observed has identical topology to those of the two mesophilic members of the family whose structures have been elucidated previously. A Hepes buffer molecule bound in the active site may have triggered a conformational change to an active configuration as the two catalytic residues Glu124 and Glu207, together with dependent residues, are observed in a conformation similar to that seen in the structure of Streptomyces lividans CelB2 complexed with an inhibitor. The structural similarity between this cellulase and the mesophilic enzymes serves to highlight features that may be responsible for its thermostability, chiefly an increase in ion pair number and the considerable stabilisation of a mobile region seen in S. lividans CelB2. Additional aromatic residues in the active site region may also contribute to the difference in thermophilicity. (C) 2002 Elsevier Science Ltd. All rights reserved.

L3 ANSWER 2 OF 3 SCISEARCH COPYRIGHT 2002 ISI (R) DUPLICATE 1
ACCESSION NUMBER: 1998:942580 SCISEARCH
THE GENUINE ARTICLE: 145XB
TITLE: Purification, characterization, and molecular analysis of **thermostable cellulases** CelA and CelB from Thermotoga neapolitana
AUTHOR: Bok J D; Yernool D A; Eveleigh D E (Reprint)
CORPORATE SOURCE: RUTGERS STATE UNIV, COOK COLL, DEPT MICROBIOL & BIOCHEM, 76 LIPMAN DR, NEW BRUNSWICK, NJ 08901 (Reprint); RUTGERS STATE UNIV, COOK COLL, DEPT MICROBIOL & BIOCHEM, NEW BRUNSWICK, NJ 08901
COUNTRY OF AUTHOR: USA

SOURCE: APPLIED AND ENVIRONMENTAL MICROBIOLOGY, (DEC 1998) Vol. 6[redacted]No. 12, pp. 4774-4781.
Pu[redacted]isher: AMER SOC MICROBIOLOGY, [redacted]5 MASSACHUSETTS AVENUE, NW, WASHINGTON, DC 20005-4171.
ISSN: 0099-2240.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI
LANGUAGE: English
REFERENCE COUNT: 54

ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

AB Two thermostable endocellulases, CelA and CelB, were purified from Thermotoga neapolitana. CelA (molecular mass, 29 kDa; pI 4.6) is optimally active at pH 6.0 at 95 degrees C, while CelB (molecular mass,30 kDa; pI 4.1) has a broader optimal pH range (pH 6.0 to 6.6) at 106 degrees C. Both enzymes are characterized by a high level of activity (high V-max value and lent apparent K-m value) with carboxymethyl cellulose; the specific activities of CelA and CelB are 1,219 and 1,536 U/mg, respectively. With p-nitrophenyl cellobioside the V-max values of CelA and CelB are 69.2 and 18.4 U/mg, respectively, while the K-m values are 0.97 and 0.3 mM,respectively. The major end products of cellulose hydrolysis, glucose and cellobiose, competitively inhibit CelA, and CelB, The K-i values for CelA are 0.44 M bp glucose and 2,5 mM far cellobiose; the K-i values far CelB are 0.2 M for glucose and 1.16 mM for cellobiose, CelB preferentially cleaves larger cellooligomers, producing cellobiose as the end product; it also exhibits significant transglycosylation activity, This enzyme is highly thermostable and has half-lives of 130 min at 106 degrees C and 26 min at 110 degrees C. A single clone encoding the celA and celB genes was identified by screening a T. neapolitana genomic library in Escherichia coli, The celA gene encodes a 257-amino-acid protein, while celB encodes a 274-amino-acid protein. Both proteins belong to **family 12** of the glycosyl hydrolases, and the two proteins are 60% similar to each other, Northern! blots of T. neapolitana mRNA revealed that celA and celB are monocistronic messages, and both genes are inducible by cellobiose and are repressed by glucose.

L3 ANSWER 3 OF 3 SCISEARCH COPYRIGHT 2002 ISI (R) DUPLICATE 2
ACCESSION NUMBER: 1998:313351 SCISEARCH
THE GENUINE ARTICLE: ZH504
TITLE: Cloning, sequencing and overexpression of a Rhodothermus marinus gene encoding a **thermostable cellulase** of glycosyl hydrolase **family 12**
AUTHOR: Halldorsdottir S; Thorolfsdottir E T; Spilliaert R; Johansson M; Thorbjarnardottir S H; Palsdottir A; Hreggvidsson G O; Kristjansson J K; Holst O; Eggertsson G (Reprint)
CORPORATE SOURCE: UNIV ICELAND, INST BIOL, MOL GENET LAB, IS-108 REYKJAVIK, ICELAND (Reprint); UNIV ICELAND, INST BIOL, MOL GENET LAB, IS-108 REYKJAVIK, ICELAND; TECHNOL INST ICELAND, DEPT BIOTECHNOL, IS-112 REYKJAVIK, ICELAND; LUND UNIV, CTR CHEM & CHEM ENGN, S-22100 LUND, SWEDEN
COUNTRY OF AUTHOR: ICELAND; SWEDEN
SOURCE: APPLIED MICROBIOLOGY AND BIOTECHNOLOGY, (MAR 1998) Vol. 49, No. 3, pp. 277-284.
Publisher: SPRINGER VERLAG, 175 FIFTH AVE, NEW YORK, NY 10010.
ISSN: 0175-7598.
DOCUMENT TYPE: Article; Journal
FILE SEGMENT: LIFE; AGRI

LANGUAGE: English
REFERENCE COUNT: 36

ABSTRACT IS AVAILABLE IN THE ALL AND TIALL FORMATS

AB A gene library from the thermophilic eubacterium Rhodothermus marinus, strain ITI 378, was constructed in pUC18 and transformed into Escherichia coli. Of 5400 transformants, 3 were active on carboxymethylcellulose. Three plasmids conferring cellulase activity were purified and were all found to contain the same cellulase gene, celA. The open reading frame for the celA gene is 780 base pairs and encodes a protein of 260 amino acids with a calculated molecular mass of 28.5 kDa. The amino acid sequence shows homology with cellulases in glycosyl hydrolase **family 12**. The celA gene was overexpressed in E. coli when the pET23, T7 phage RNA polymerase system was used. The enzyme showed activity on carboxymethylcellulose and lichenan, but not on birch xylan or laminarin. The expressed enzyme had six terminal histidine residues and was purified by using a nickel nitrilotriacetate column. The enzyme had a pH optimum of 6-7 and its highest measured initial activity at 100 degrees C. The heat stability of the enzyme was increased by removal of the histidine residues. It then retained 75% of its activity after 8 h at 90 degrees C.